OBSERVATIONS ON THE FINNISH ELECTORAL SYSTEM

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INTRODUCTION

In this paper we study the Finnish system of proportional representation (PR, for short) from the theoretical view-point. Our main concerns are the mathematical devices that have been adopted at various phases of the electoral process to guarantee the proportionality of the results. Many basic questions are only briefly touched upon in this paper. Among them is the question of whether proportionality is desirable in the first place. The legal documents and the legislators' likely intentions underlying them form the point of departure of this analysis. In other words, we shall focus on what kind of proportionality the legislators have probably aimed at and on the degree to which the mathematical devices currently in use satisfy these aims.

The proportionality problematique will be discussed in the present paper in the connection of parliamentary elections but our conclusions hold for the indirect presidential elections as well. Two phases of the parliamentary elections are particularly pertinent: (i) the way in which the seats are allocated to the electoral districts, and (ii) the way in which the seats are allocated to parties or electoral alliances after the ballots have been cast. Let us consider these phases in turn.

THE ALLOCATION OF SEATS TO DISTRICTS

According to the Act of the Election of Representatives it is the duty of the Council of Ministers (cabinet) to decide how 199 of the parliamentary seats are allocated to the electoral districts. As a general guideline the document states that the allocation should be made proportional to the populations in the various districts. The number of districts is not fixed by the same

document, though. Only the upper and lower bounds are given. During the past two decades the number of districts has, however, been fixed at 14. The Act mentioned above stipulates that the province of Åland is entitled to one representative out of 200.

The Act also stipulates that the census data be used in the computation of the proportional seat allocation to districts so that the entire registered populations – and not e.g. the sizes of the adult populations – count. In practice the formula that has been used in allocating the number s'_i of seats to district i with a population of n_i is the following:[1]

$$\frac{\sum_i n_i}{n_i} = \frac{199}{s'_i} \text{ or } s'_i = \frac{n_i}{\sum_i n_i} \cdot 199; \; i = 1, \ldots, 14$$

Now s'_i so obtained is not in general an integer. How, then, can one deal with the fractional remainders? Prima facie, it would seem that no harm is done if one simply ignores them. But then the sum of the seats would not in general be equal to 199, but somewhat less. The solution adopted by the Finnish cabinet is to allocate each district i either s_i or s_i+1 seats where s_i is the integer part of s'_i. Now if $\sum_i s_i < 199$ which generally is the case, $s_j + 1$ seats are given to district j with the largest fractional remainder and so on until the sum of allocated seats is precisely 199. From *Balinski's* and *Young's* recent book (1982) we know that this allocation principle is actually *Hamilton's* method which in itself is an interesting chapter in American electoral history (see also Brams 1976, 137–166). Hamilton's method was formally in use in the elections to the US House of Representatives for a period of fifty years from 1850 onwards. The reason for its eventual abandonment was its failure to satisfy house-monotonicity. One instance of this feature was the well-known Alabama paradox: by Hamilton's method the state of Alabama was entitled to 8 representatives out of 299 but only to 7 representatives had the total number of representatives been 300. In general, house-monotonicity requires that if the total number of seats is increased, no district is entitled to fewer seats than before. Now obviously if the total number of allocated seats is fixed – 199 in Finland – then the non-monotonicity of the type of the Alabama paradox cannot occur. However, another kind of non-monotonicity still haunts Hamilton's method, viz. the population paradox. This paradox occurs when a district loses a seat to another district even though its population increases relative to that of the latter (see Balinski & Young 1982, 43). If a method is population-monotone, it cannot be the case that if a district grows in population relative to another, it loses seats relative to the latter.

Hamilton's method is not population-monotone. Nor is it exempt from yet another type of non-monotonicity, viz. the paradox of new states. Once more the history of the United States provides an example (Balinski & Young 1982, 44). In 1907 Oklahoma entered the Union and Hamilton's method gave it 5 out of 391 seats in the House of Representatives. The same method gave Maine 4 and New York 37 seats. Before Oklahoma's joining, the total number of seats was 386 and the number of seats for Maine and New York 3 and 38, respectively. The paradox consists in the fact that the entrance of Oklahoma changed the distribution of seats between some of the states already in the Union even though the number of seats in the House was increased by the number to which the new entrant was entitled.

Even though Hamilton's method is used in Finland in the allocation of seats to electoral districts, the violations of monotonicity in the various senses discussed above have not occurred. In the case of house-monotonicity the reason is simple; the size of the parliament has remained fixed. Nor is there any evidence of the population paradox during the past two decades when the number of districts has been 14. The paradox of new states has not occurred either for the obvious reason that no new districts with additional seats have entered the parliament. To show that Hamilton's method is, however, capable of producing a new state paradox, a thought experiment was conducted by considering the province of Åland – which under the present system is entitled to one and only one representative regardless of the census data – as an ordinary electoral district and by calculating the distribution of 200 seats on the assumption that there are 15 electoral districts.

In the 1972 elections this thought experiment would have produced a new states paradox (see table 4). In the light of the relevant census data Hamilton's method would have allocated Åland 1 seat had it been used in Åland's case. The district Uusimaa would have got 22 seats and the district of Mikkeli 9 seats. However, Hamilton's method for 199 seats, Åland excluded, gave Mikkeli 10 seats and Uusimaa 21 seats. Hence the addition of Åland and one seat would have resulted in a reallocation of one seat between Mikkeli and Uusimaa districts. Surely not a dramatic result but illustrative of the nature of the paradox to which Hamilton's method is vulnerable.

On the other hand, Hamilton's method has an unobjectionable advantage over some of its competitors: it always satisfies the quota. In other words, it never gives a district more than $\frac{n_i}{n} \cdot s + 1$ or less than $\frac{n_i}{n} \cdot s - 1$ seats. This property follows directly from the computational formula.

The Finnish PR system does not resort to Hamilton's method throughout the electoral process. When the seat allocation to districts has been performed and the citizens have cast their votes, another method is used to transforming the votes into parliamentary seats. The latter method is rather common in Europe and goes under various names. In Finland it is called d'Hondt's method according to its Belgian advocate. It seems that the first inventor of the method was not *Victor d'Hondt,* however. It seems that *Thomas Jefferson* had proposed it earlier (see Balinski & Young 1975). In the Finnish system this (hereinafter Jefferson's) method is used to allocate – within districts – the seats to parties or electoral alliances. The method gives each party or alliance the total number of votes given to the candidates of the party or alliance. For party or alliance k, denote this number by P_k. The candidate in k who gets the largest number of personal votes, gets P_k as his/her score, the candidate with the second largest personal vote total gets the score $P_k/2$, the third candidate $P_k/3$ etc. The seats are then allocated to candidates in the order of their scores.

In contrast to that of Hamilton, Jefferson's method belongs to the class of divisor methods, i.e. those which are based on dividing the support of a candidate or party (or, in the case of apportionment, the population of a district) by a suitable number so as to end up with quotients which under specific rounding-off rules are transformed into seats. In Jefferson's method the purpose of the rounding-off rule is to give each party or alliance the integer part of its quotient. The divisor, in turn, is to be chosen in such a way that these integer parts add up to the total number of seats under consideration.

From computational formula of Jefferson's method it is immediately evident that the method is population-monotone. Moreover, it has the virtue of guaranteeing each party or alliance the integer part of its quota (Balinski & Young 1982, 90–91). Its drawback is the possibility that the upper quota is exceeded, that is, a party or alliance is given more seats than its exact quota rounded-up would indicate. These two features – the lower quota satisfaction and the possibility of the violation of the upper quota – render Jefferson's method positively coalition-encouraging.

Does the phenomenon of upper quota violation, then, occur in practice? It does, indeed, even though its occurrence is by no means common. In the 1979 parliamentary elections one party (Kokoomus, KOK) was given 7 seats in Helsinki district while its quota was 5.928. In the same elections KOK got 7 seats in Uusimaa district even though its quota was 5.964. Similarly, the

Social Democratic Party (SDP) got 8 seats in the district of Uusimaa while its quota was 6.991.

That Jefferson's method favours large parties or alliances and, consequently, encourages coalitions can be seen when the within-district allocations using the method are compared with those that result from the application of *Webster's* method which is coalition-neutral, i.e. does not encourage or discourage coalition-formation (see Balinski & Young 1982). Webster's method is a divisor method, too, but it operates so that the populations of districts or the total votes given to parties or alliances are divided by such a divisor that the quotients, rounded up or down in *the customary way*, add up to the total number of seats. Each district, party or alliance, as the case may be, is then given the number of seats that equals its rounded quotient.

Had Webster's method been used in the 1979 elections, the total of 11 seats would have been allocated differently than under the present system. In 1983 the number of reallocations would have been 12 (see Table 1). In the former elections SDP would have lost 5 seats, KOK 4 seats and the Center Party–Liberal Party alliance (KESK–LKP) 2 seats. The largest single gainer under the Websterian allocation would have been the Finnish People's Democratic League (SKDL) with 3 additional seats. The remaining seven seats would have been allocated to LKP, the Constitutional Party (PKP/POP), the Finnish Rural Party (SMP), the Finnish Christian League (SKL) and the Finnish People's Unity Party (SKYP) that formed somewhat varying alliances in various districts. All of these parties were very small. In the 1983 elections the losers under Websterian allocation would have been SDP (5 seats), KESK–SKL (4), KOK (2), and the Swedish People's Party (RKP) (1). However, the net loss for SDP, KOK and KESK–SKL would only have been 4 seats, 1 seat and 3 seats, respectively, as these parties and alliances would have been gainers in some districts as well. The greatest winners would have been SKDL with 4 additional seats, SMP with 3 seats and SKL–KVL (The League of Citizen Power) with 2 seats. Thus in the two most recent elections the losers would have been mainly the large parties, and the gainers predominantly the small ones, though not in every case.

PROBLEMS OF INTERPRETATION

We observe then that two methods of PR are used in Finland: one for the apportionment of seats to electoral districts and the other for assigning seats to parties or alliances. Both can be interpreted in a seemingly straight-forward way. Hamilton's method allocates seats to districts in exact proportion to

their populations. Jefferson's method, on the other hand, gives exactly one representative for a given number of votes.

If both the quotients and quotas used in the calculations were always integers, no interpretation problems would arise. Of course one would still be faced with the question of why two rather than one PR principles are used, but from the view-point of interpreting what has been done when seats are allocated in a given way, the matter would be easily explained. However, the calculations do not in general result in integers, and the question now is what does the fact that the quota of district i consists of both an integer and a fractional remainder mean. In the case of Hamilton's method the fractional remainders behave in a particularly counterintuitive way as exemplified by the Alabama paradox, the population paradox and the paradox of new states. These are all paradoxes of monotonicity and, especially in the case of the population paradox, seem to cast a shadow over the meaningfulness of the apportionment. Even though we have no record of this paradox actually having occurred in Finnish electoral history, we have no assurance that it will not happen in the future. Be that as it may, the fractional remainders of the exact quota do not lend themselves to a meaningful interpretation.

In the case of Jefferson's method the interpretation is easier due to the fact that the method is a divisor one. This means that it assigns one representative for a fixed number of votes. Moreover, the divisor is chosen in such a fashion that the integer parts of the quotients add up to the total number of seats. This would seem to do away with the problem of fractional remainders by simply ignoring them. But surely this is an unusual way of rounding-off numbers. Moreover, it treats parties in a somewhat discriminative fashion: for large parties the loss – i.e. the votes in excess of that required to assure that the party gets the integer part of its quotient – from rounding-down is smaller per seat than for small parties (see Rokkan 1968; Rae 1967). This feature is well-known and requires no further comment except for the observation that coalition-encouragement is usually deemed a virtue in PR systems (see Balinski & Young 1978; Balinski & Young 1982, 150).

Up to now we have mainly considered the two PR methods used in Finland separately, but it should be emphasized that they are both applied to each election. Moreover, they are based on different ideals of PR and, therefore, one should ask whether they are compatible as far as these ideals are concerned. Now the motivation underlying the use of Hamilton's method is that the seats should be allocated to electoral districts strictly in proportion to their populations. But as we have observed monotonicity paradoxes undermine this motivation to some extent. What seems to be clear is that Hamilton's method is primarily motivated by proportionality considerations in contra-

distinction to Jefferson's method which apparently finds some of its justification in coalition-encouragement as well. When proportionality is the main concern one could well ask why some other method should not be used which would be exempt from the monotonicity paradoxes and yet would primarily aim at proportionality. One such procedure is Webster's method which, as was pointed out above, neither encourages nor discourages coalitions. Therefore, it would seem to fit perfectly the idea of proportionality in apportionment.

Prima facie, one would expect some discrepancy between Hamiltonian and Websterian allocations due to the fact that the latter is a divisor method while the former is not. In the Finnish experience the differences in apportionment are minor, indeed: only two seats would have been reallocated had Webster's method been used in the apportionment of seats to districts in the parliamentary elections since 1960 (see Table 2). In the 1962 elections the district of Northern Karelia would have lost one seat to the district of Oulu, if Webster's method had been used. Similarly, in the 1972 elections the district of Uusimaa would have gained one seat from the district of Mikkeli. Otherwise the adoption of the more straight-forwardly interpretable Webster's method would have resulted in no changes in the allocations of seats to the 14 districts.

It is generally known that the main source of discrepancy from perfect proportionality in all PR systems is the existence of more than one district. The larger the number of districts the more deviation from proportionality one could expect ceteris paribus (see e.g. Blondel 1969; Lijphart 1982). The most obvious reason for this phenomenon is that especially the small parties with a reasonably even support throughout the country or at least in several districts may fail to exceed the factual vote threshold needed to get one representative elected in all districts. But even large parties can become victims of a similar phenomenon, viz. they may be close to getting an additional seat in several districts and, thus, the over-all seat distribution may deviate from the support distribution to some extent. To get an idea of the magnitude of the discrepancy from proportionality due to the existence of several districts, the seat distribution in the Finnish parliament was computed for the two most recent elections assuming that instead of 14 there would have been only one district (the district of Åland was disregarded in this recomputation). As some of the electoral alliances were not formed in every district, the reallocations reported first were computed from the differences between seat allocations assuming that no alliances were formed. This way the »pure» effect of the number of districts becomes more readily discernible (see Table 3). In the 1979 elections the single-district system with Jefferson's

method would have resulted in the reallocation of 17 seats. The losers would have been SDP (4 seats), KESK (3), SKDL (4), and KOK (6), while the winners would have been SKL (3 seats), SMP (5), RKP (4), PKP (2) and LKP (3).

In the 1983 election the single-district system would again have benefited the small parties, SMP (2 seats) and SKL (6), and hurt the large ones: SDP (4), KESK (2), KOK (1) and SKDL (1). However, when compared with the seat distributions under the current system with electoral alliances formed in some of the districts, the number of reallocations becomes smaller but nonetheless significant: in the 1979 elections 8 and in the 1983 elections 7 reallocations. Evidently the claim that the Finnish electoral system favours large parties gains support from these data, but the reason is not only Jefferson's system but the existence of multiple districts.

We see that when compared with the distributional changes resulting from the adaption of Webster's instead of Hamilton's method in the apportionment of seats to districts, the abandonment of the multiple-district system would, indeed, be a major innovation if one aims at increasing proportionality. One must pay due attention to the fact that this step can be taken without encouraging schisms as Jefferson's method could well be used in a single-district system. In fact the above hypothetical calculations were performed by using Jefferson's method. From a purely moral view-point the property of coalition-encouragement may be regarded as insufficient justification for a method like Jefferson's, but there seems to be even less justification for a multi-district system as it per se has nothing to do with incentives to coalition formation which perhaps could be justified on pragmatic grounds. And yet the multi-district system results in relatively large deviations from proportionality.

SOME FUNDAMENTAL QUESTIONS

The Finnish system of PR satisfies the ideal of proportionality reasonably well. But why should one aim at proportionality in the first place? This question is well worth asking as it is clearly the case that single-member constituencies have one definite virtue over the multi-member ones, viz. the fact that the elected candidate can be thought of as the representative of the area or district from which he/she has been elected. Even the voters who voted for another candidate can turn to him/her in issues of local importance. At least that is conceivable while in multi-member constituencies the link between the representatives and the voters necessarily becomes weaker. But clearly the existing systems of single-member constituencies violate propor-

tionality. So it seems that the more immediate link between the voters and their representatives cannot be achieved unless one sacrifices the principle of proportionality. *Brams* and *Fishburn* (1983), however, propose a system which brings these two ideals closer to each other. The system works as follows. Suppose that there are two parties competing in ten districts. Suppose, moreover, that party A gets the majority of votes in seven districts while party B wins in three districts. Let the distribution of votes over the entire population – i.e. over the ten districts – be 60 % for party A and 40 % for party B. As a preliminary step the Brams-Fishburn method now assigns ten seats to A, the winner in the majority of districts. But according to proportionality B is entitled to 4 seats. If B had won by a majority in none of the districts, the method would simply add 4 seats to the body of 10 representatives and these added seats would belong to B. But in our example party B wins in three districts by a majority. These are taken into account in the final seat allocation so that A is not given 10 but 10–3 = 7 seats and B is given the three seats to which it is »entitled» by the majority principle plus one additional seat by the principle of proportionality. Thus, the final distribution of seats is 7 to A and 4 to B. The size of the body has thereby been increased by one seat. There are two constraints which must be satisfied throughout procedure: (1) the smaller party must not get a larger share of seats than its share of votes, and (2) there must not be incentives for losing for the smaller party in any district. In our example both of these constraints are satisfied as can easily be seen.

Obviously the Brams-Fishburn system improves the proportionality of the two-party majority systems but does so in a way that destroys the single-member nature that seems a definite virtue. In fairness to Brams and Fishburn it should be pointed out that the idea of variable size legislature is proposed to provide a plausible alternative to the single transferable vote procedure which has been proposed by some authors to bring about some proportionality in plurality systems. For this purpose the Brams-Fishburn system seems superior as it is monotonic in voter preferences, whereas the single transferable vote is not.

In single-member constituency systems we encounter in a very conspicuous way one of the basic problems of PR, viz. the tacit assumption that only each voter's first preferences count. All proportional seat allocations are proportional with respect to some social preference rule. In the case of Jefferson's, Webster's or Hamilton's method when they are used in assigning seats to parties, the underlying social preference rule is the plurality principle. However, this is by no means the only conceivable rule (see Nurmi 1983). For example the single transferable vote system (see Rae 1967, 36–38) used e.g.

in Australia and Ireland is based on a different underlying social preference rule. Similarly the approval voting system is based on a preference rule that utilizes more information about voter preferences than plurality voting does (see Brams & Fishburn 1978; Brams & Fishburn 1983a). It is conceivable that social preference rules based on even more detailed information about voter preferences be used in defining what proportionality really means. Some thought should be given to this problem as it is not in general the case that a system which is proportional with respect to one underlying social preference rule is also proportional when some other rule is dealt with.

In multi-member districts – like the Finnish ones – the assumption just mentioned may not necessarily be all that important as it is likely that persons whose first preference is a candidate of party X have a candidate of the same party as their second choice as well. In the end this is, however, an empirical question and its answer determines the seriousness of the underlying assumption.

CONCLUSIONS

Could one then make some recommendations for reforming the Finnish system of parliamentary elections on the basis of the preceding observations? It depends on the goals of the reformer of course (see Laakso & Taagepera 1978, 59). If these are formulated in a loose way, the analyst must be careful not to specify them in such a fashion as to make them different from the reformer's intentions. All PR systems seem to be based on the assumption that the distribution of the basic types of ideas of a good society should be roughly the same in the society at large and in the legislative body. If this assumption is taken as the point of departure and the thorny problems of determining the relationship between seat distribution and the legislative power distribution are ignored (see e.g. Nurmi 1981) one straight-forward observation can be made. There are two major causes of the deviations from proportionality in the Finnish system: (i) the existence of multiple electoral districts, and (ii) the use of Jefferson's method in within-district allocations. If one wants to increase proportionality by reducing the number of districts to one, the various geographical areas can still be guaranteed representation by maintaining the present system of electoral districts for the purpose of candidate recruitment. In the election proper there would be no changes at all, i.e. each voter could vote for one candidate in his/her district. Only the computation of the results would become more proportional. One complication should be observed though. The districts should be of roughly equal

size since the allocation of seats to candidates within parties or alliances depends on the personal vote totals which obviously are sensitive to district sizes.

If, however, the present 14 districts are to be also maintained as computational units, then Webster's method could be adopted in allocating seats to districts as this method is exempt from the monotonicity paradoxes from which the currently used Hamilton's method suffers. On the other hand, the quota satisfaction of the allocation results should be checked although Webster's method is very unlikely to violate the quota.

As for point (ii) above, i.e. the assignment of seats to parties or alliances given the vote distribution either under the present 14 district system or the proposed one-district system, it is more difficult to make a recommendation between Jefferson's and Webster's methods. Purely proportionality considerations speak in favour of the latter: it neither encourages nor discourages coalitions and is very likely to stay within the quota constraints. Jefferson's method, in turn, may exceed the upper quota constraint, which feature also explains its coalition-encouraging nature. This feature can be (and has been) used in defending it in a system where the number of parties already is large (see Laakso & Taagepera 1978; Laakso & Taagepera 1979, for comparative studies on fractionalization and deviations from proportionality). Nevertheless, it is worth asking whether we really need *two* devices that lead to deviations from proportionality and that moreover point in the same direction, viz. the multi-district system and Jefferson's method.

More important than the technical details involved in transforming votes into seats is the problem touched upon in the preceding section, viz. which social preference rule should be used in the definition of the proportionality of the election results. The Finnish political system is very strongly party-oriented. As was pointed out above this feature makes it somewhat less likely that the adaption of some other than the plurality principle as the social preference rule would give electoral results dramatically different from the current ones. We do not know this for sure, though. Moreover, we don't know whether the party-orientation is a consequence of the Finnish electoral system and whether a change of system would bring about e.g. candidate-orientation.

NOTE

1 The authors are grateful to Mr. H. Taponen of the Finnish Ministry of Justice for giving access both to the data and the computation formulae used by the Finnish cabinet staff.

Table 1. The allocation of seats to parties and electoral alliances using Jefferson's and Webster's methods in the 1979 and 1983 elections.

The 1979 elections

	Jefferson	*Webster*	*Exact quota*
District of Helsinki		(divisor 14500)	
Alliance 1 (RKP–KESK–LKP)	3	3	3.261
Alliance 2 (SKL–SMP)	1	1	1.400
SDP	6	5	5.146
KOK	7	6	5.928
SKDL	3	4	3.334
PKP	–	1	0.820
District of Uusimaa		(divisor 14700)	
Alliance 1 (SKL–SMP)	1	2	1.702
Alliance 2 (SKDL–STP)	4	4	4.221
Allience 3 (SKYP–LKP)	1	1	1.587
KESK	2	2	1.873
RKP	3	3	3.001
PKP	–	1	0.629
KOK	7	6	5.964
SDP	8	7	6.991
District of Turku south		(divisor 14470)	
Alliance 1 (KESK–RKP)	3	3	2.950
Alliance 2 (SKDL–STP)	3	3	3.330
Alliance 3 (SKL–SMP–PKP)	2	2	1.820
SDP	4	4	3.848
KOK	5	4	4.192
LKP	–	1	0.837
District of Turku north		(divisor 14662)	
Alliance 1 (KESK–LKP)	3	3	2.842
Alliance 2 (PKP–SMP–SKL)	1	1	1.442
SDP	3	3	3.306
KOK	3	3	3.712
SKDL	3	3	2.683
District of Häme south		(divisor 14520)	
Alliance 1 (SKDL–STP)	2	2	2.367
Alliance 2 (SKL–SMP–PKP)	1	2	1.624
Alliance 3 (KESK–LKP)	2	2	2.165
KOK	5	4	4.271
SDP	5	5	4.538

	Jefferson	*Webster*	*Exact quota*
District of Häme north		(divisor 14800)	
Alliance 1 (SKDL–STP)	3	3	3.194
Alliance 2 (LKP–SMP–PKP–SKL)	1	2	1.584
KOK	4	4	3.691
SDP	4	3	3.503
KESK	1	1	1.012
District of Kymi		(divisor 14238)	
Alliance 1 (SKL–SMP–PKP)	2	2	1.954
Alliance 2 (KESK–LKP–RKP)	3	3	2.889
SKDL	1	2	1.543
SDP	6	5	5.207
KOK	3	3	3.371
District of Mikkeli		(divisor 14500)	
Alliance 1 (KESK–LKP)	2	2	2.559
Alliance 2 (SKDL–STP)	1	1	0.918
Alliance 3 (SKL–SMP–PKP)	1	1	0.997
SDP	3	3	2.645
KOK	2	2	1.880
District of North Karelia		(divisor 15180)	
Alliance 1 (KESK–LKP–SKYP)	2	2	1.917
Alliance 2 (SKL–SMP–PKP)	1	1	1.140
Alliance 3 (SKDL–STP)	1	1	0.762
SDP	2	2	1.984
KOK	1	1	1.180
District of Kuopio		(divisor 13250)	
Alliance 1 (SMP–SKL–PKP)	1	1	1.401
Alliance 2 (KESK–LKP)	4	3	3.426
SKDL	2	3	2.453
KOK	2	2	1.775
SDP	2	2	1.945
District of Central Finland		(divisor 14886)	
Alliance 1 (SMP–SKL–PKP)	1	1	1.272
Alliance 2 (KESK–LKP)	2	2	2.392
SDP	3	3	2.779
SKDL	2	2	2.039
KOK	2	2	1.637

	Jefferson	*Webster*	*Exact quota*
District of Vaasa		(divisor 14975)	
Alliance 1 (LKP–SKYP)	–	1	0.601
Alliance 2 (SKL–SMP–PKP)	2	2	1.841
KESK	5	5	4.610
RKP	3	3	3.188
SKDL	2	2	2.048
KOK	3	3	3.156
SDP	3	2	2.556
District of Oulu		(divisor 14200)	
Alliance 1 (KESK–LKP)	7	6	6.112
Alliance 2 (SMP–SKL–PKP)	1	2	1.662
SDP	2	2	2.259
SKDL	5	5	4.461
KOK	2	2	2.462
District of Lapland		(divisor 15190)	
Alliance 1 (SKL–SMP–PKP)	–	–	0.330
Alliance 2 (KESK–LKP)	3	3	3.144
SKDL	3	3	2.516
SDP	1	1	1.024
KOK	1	1	0.928

The 1983 elections

District of Helsinki	*Jefferson*	*Webster*	*Exact quota*
		(divisor 15388)	
Alliance 1 (RKP–SKL)	2	2	2.082
Alliance 2 (SMP–POP)	2	2	1.891
SDP	6	5	5.415
KOK	6	6	5.969
KESK	1	1	1.019
SKDL	2	3	2.613
Others	1	1	0.972
District of Uusimaa		(divisor 14416)	
Alliance 1 (KESK–SKL)	2	3	2.502
Alliance 2 (SMP–POP)	2	2	2.114
SDP	9	8	8.254
KOK	7	7	6.791
SKDL	3	3	3.157
RKP	3	3	3.247
Others	1	1	0.891

	Jefferson	*Webster*	*Exact quota*
District of Turku south		(divisor 14600)	
Alliance 1 (SKL–KVL)	–	1	0.492
Alliance 2 (KESK–RKP)	3	3	3.095
SDP	5	4	4.231
KOK	4	4	3.967
SKDL	3	3	2.529
SMP	2	2	2.323
District of Turku north		(divisor 14992)	
SDP	4	4	3.675
KOK	3	3	2.974
KESK	2	2	2.169
SKDL	2	2	2.219
SMP	2	2	1.526
SKL	–	–	0.394
District of Häme south		(divisor 14300)	
Alliance 1 (KESK–SKL–RKP)	2	2	2.268
SDP	5	5	5.018
KOK	5	4	4.244
SMP	1	2	1.451
District of Häme north		(divisor 15545)	
Alliance 1 (SKL–KVL)	–	1	0.658
SDP	4	4	3.836
KOK	4	3	3.616
KESK	1	1	0.987
SKDL	3	3	2.584
SMP	1	1	1.109
District of Kymi		(divisor 15442)	
Alliance 1 (KESK–SKL–RKP)	3	3	2.951
SDP	6	5	5.206
KOK	3	3	3.263
SKDL	1	1	0.898
SMP	1	2	1.568
District of Mikkeli		(divisor 15000)	
Alliance 1 (KESK–SKL)	3	2	2.566
SDP	3	3	2.850
KOK	2	2	1.974
SKDL	–	1	0.633
SMP	1	1	0.977

	Jefferson	*Webster*	*Exact quota*
District of North Karelia		(divisor 15353)	
Alliance 1 (SKL–KVL)	–	–	0.341
SDP	3	2	2.233
KOK	1	1	1.270
KESK	2	2	1.747
SKDL	–	1	0.620
SMP	1	1	0.790
District of Kuopio		(divisor 16200)	
Alliance 1 (KESK–SKL)	3	3	2.978
SDP	2	2	2.300
KOK	1	1	1.592
SKDL	2	2	1.684
SMP	2	2	1.638
District of Central Finland		(divisor 16000)	
Alliance 1 (KESK–SKL–RKP)	3	2	2.573
SDP	3	3	3.061
KOK	1	1	1.829
SKDL	2	2	1.655
SMP	–	1	0.761
District of Vaasa		(divisor 14600)	
Alliance 1 (KESK–SKL)	6	6	5.381
Alliance 2 (SMP–POP)	1	1	1.421
SDP	3	3	3.130
KOK	3	3	3.099
SKDL	1	2	1.629
RKP	4	3	3.336
District of Oulu		(divisor 14500)	
Alliance 1 (KESK–SKL)	7	6	6.628
SDP	3	3	2.936
KOK	2	3	2.592
SKDL	4	4	3.624
SMP	2	2	2.210
District of Lapland		(divisor 14000)	
Alliance 1 (KESK–SKL)	4	3	3.118
SDP	1	2	1.355
KOK	1	1	0.959
SKDL	1	1	1.250
SMP	–	–	0.321
Others	1	1	0.986

Table 2. The apportionment of seats to districts in the 1962 and 1972 elections using Hamilton's and Webster's methods.

The 1962 elections	(divisor 22150)				
District	*Population*	*Quota*	*Hamilton*	*Quotient*	*Webster*
Helsinki	453903	20.27	20	20.492	20
Uusimaa	383397	17.12	17	17.309	17
Turku (south)	357687	15.98	16	16.148	16
Turku (north)	304514	13.60	14	13.748	14
Häme (south)	318502	14.23	14	14.379	14
Häme (north)	265781	11.87	12	11.999	12
Kymi	341878	15.27	15	15.435	15
Mikkeli	235699	10.53	11	10.641	11
Kuopio	271793	12.14	12	12.271	12
North Karelia	209706	9.37	10	9.468	9
Vaasa	448950	20.05	20	20.268	20
Central Finland	246190	11.00	11	11.115	11
Oulu	409919	18.31	18	18.506	19
Lapland	207636	9.27	9	9.374	9
The 1972 elections					
Helsinki	519356	22.065	22	22.147	22
Uusimaa	504586	21.437	21	21.518	22
Turku (south)	380760	16.176	16	16.237	16
Turku (north)	303800	12.907	13	12.955	13
Häme (south)	346059	14.702	15	14.757	15
Häme (north)	302162	12.837	13	12.885	13
Kymi	348889	14.822	15	14.878	15
Mikkeli	222201	9.440	10	9.476	9
Kuopio	262622	11.157	11	11.199	11
North Karelia	189188	8.038	8	8.068	8
Vaasa	432105	18.358	18	18.427	18
Central Finland	244548	10.390	10	10.428	10
Oulu	415661	17.659	18	17.725	18
Lapland	212120	9.012	9	9.046	9

Table 3. The Jeffersonian allocation of seats to parties in the 1979 and 1983 elections assuming that no electoral alliances were formed under the current 14-district (I) and hypothetical one-district (II) system, and the actual election results with alliances (III).

Party	I	II	III
The 1979 elections			
SDP	53	49	52
KESK	38	35	36
SKDL	40	36	35
KOK	50	44	47
SKL	6	9	9
SMP	4	9	7
RKP	4	8	9
PKP	–	2	–
LKP	4	7	4
The 1983 elections			
SDP	58	54	57
KOK	46	45	44
KESK/LKP	38	36	38
SKDL	28	27	26
SMP	17	19	17
RKP	9	9	10
SKL	–	6	3
PKP/POP	–	–	1
Others (Tennilä)	1	1	1
Others	2	2	2

Table 4. The paradox of new states as illustrated by the hypothetical 15 district situation in the 1972 elections.

District	Exact 15 district quota	Hamilton allocation	14 district allocation
Helsinki	22.076	22	22
Uusimaa	21.448	22	21
Turku (south)	16.185	16	16
Turku (north)	12.913	13	13
Häme (south)	14.710	15	15
Häme (north)	12.844	13	13
Kymi	14.830	15	15
Mikkeli	9.445	9	10
Kuopio	11.163	11	11
North Karelia	8.042	8	8
Vaasa	18.367	18	18
Central Finland	10.395	10	10
Oulu	17.668	18	18
Lapland	9.016	9	9
Åland	0.898	1	1

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